

WHAT IS CLAIMED IS:

1. A method of creating a contact for a semiconductor device comprising:

depositing a PMD layer over the semiconductor device;
depositing a silicon layer over the PMD layer;
depositing an antireflection layer over the silicon layer;
etching the silicon and antireflection layers in a tapered fashion;

etching at least one via hole in the PMD layer in a non-tapered fashion; and

forming the contact in the etched via hole.

2. The method of claim 1, wherein the contact is formed by filling the via hole with at least one metal selected from the group consisting of tungsten, copper and copper alloy.

3. The method of claim 1, wherein the diameters of the via holes at each end of the PMD layer are nearly equal.

4. The method of claim 2, wherein the contact is formed by lining the via hole with a Ti/TiN layer; and

filling the via hole with tungsten or lining the via hole with a Ta/TaN layer and filling the via hole with copper.

5. The method of claim 1, wherein the silicon layer is deposited on the PMD layer, and the antireflection layer is deposited on the silicon layer.

6. The method of claim 1, wherein the silicon layer is polycrystalline silicon.

7. The method of claim 1, wherein the silicon layer is amorphous silicon.

8. The method of claim 1, wherein a plurality of contacts are formed in the semiconductor device, each contact being formed in a separately etched via hole.

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9. The method of claim 1, further comprising:
removing the silicon and antireflection layers.

10. The method of claim 1, wherein a diameter of the via hole over a gate structure is equal to a diameter of the via hole not over the gate structure.

11. The method of claim 1, wherein the contact is formed by depositing a metal layer on the etched silicon and antireflection layers, thereby filling the via hole with metal.

12. The method of claim 8, wherein the contact is formed by depositing a tungsten layer on the etched silicon and antireflection layers, thereby filling the via holes with tungsten.

13. A semiconductor device that comprises:
a substrate;
at least one gate over the substrate;
a PMD layer over the gate and the substrate;
at least one via hole over the gate; and
at least one via hole note over the gate, wherein the via hole over the gate is not tapered and the via hole not over the gate is not tapered.

14. The semiconductor device of claim 13, wherein the via hole over the gate and the via hole not over the gate have the same diameter.

15. The semiconductor device of claim 13, wherein the via holes have been formed by depositing a silicon layer over the PMD layer, depositing an antireflective layer over the PMD layer, etching a tapered hole through the antireflective layer and the silicon layer, and anisotropically etching the PMD layer.

16. The semiconductor device of claim 13, wherein the via holes are filled with metal.

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17. The semiconductor device of claim 16, wherein the metal is at least one selected from the group consisting of tungsten, copper, and copper alloy.

18. The semiconductor device of claim 13, wherein the via holes are lined with titanium.

19. The semiconductor device of claim 13, wherein the via holes have parallel walls.